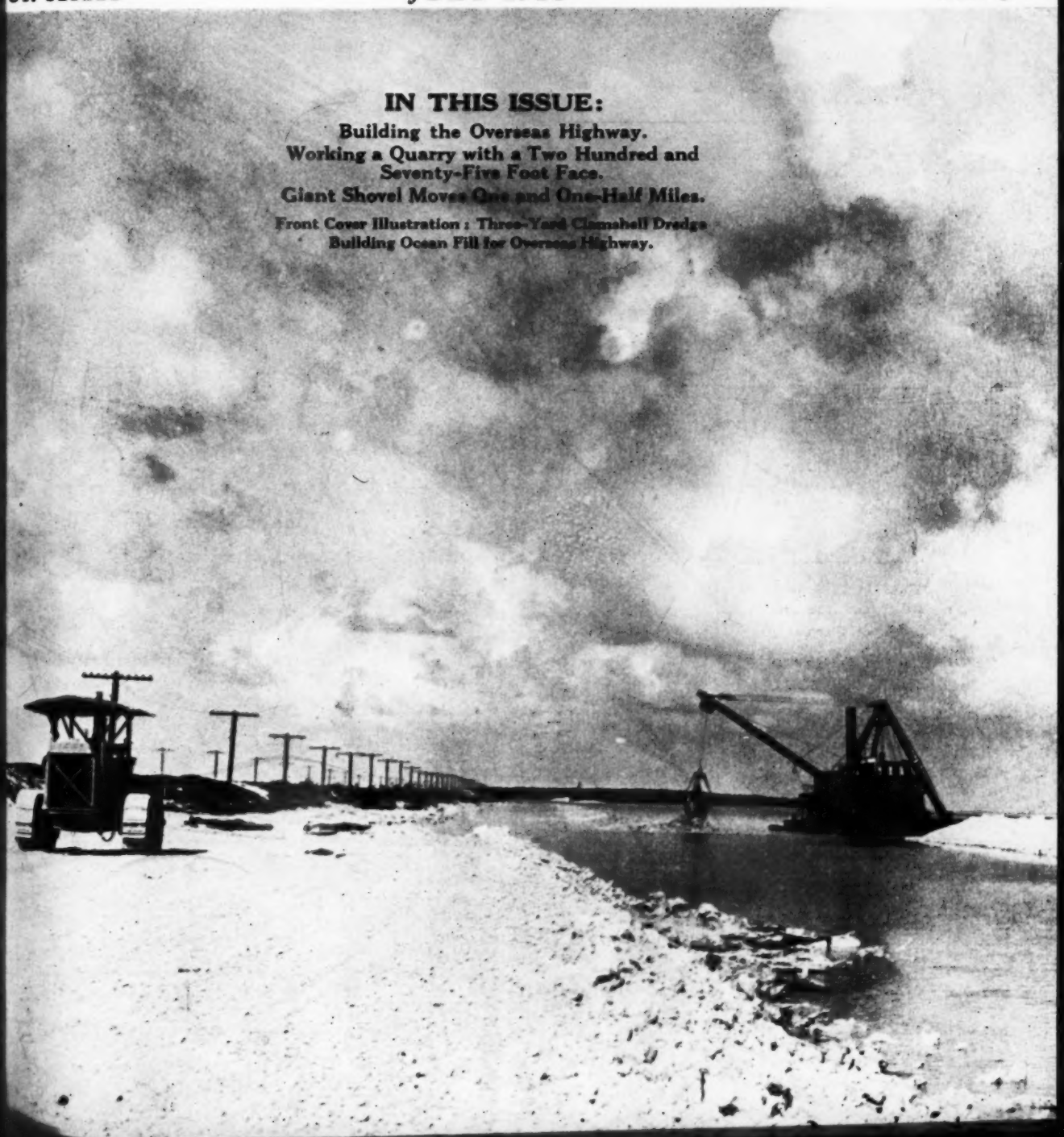
The EXCAVATING ENGINEER

ol. XXII JULY 1928 No. 7



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Working a Quarry with a Two Hundred and Seventy-Five Foot Face.
Giant Shovel Moves One and One-Half Miles.

Front Cover Illustration: Three-Yard Clamshell Dredge Building Ocean Fill for Overseas Highway.

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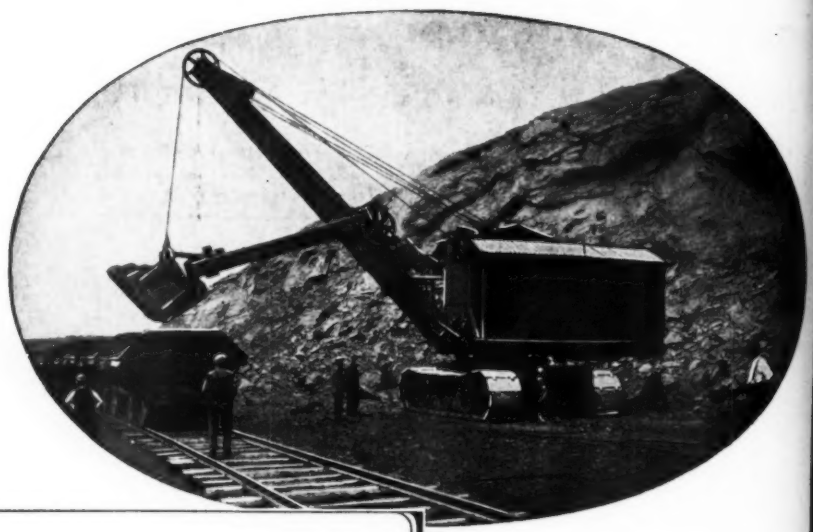
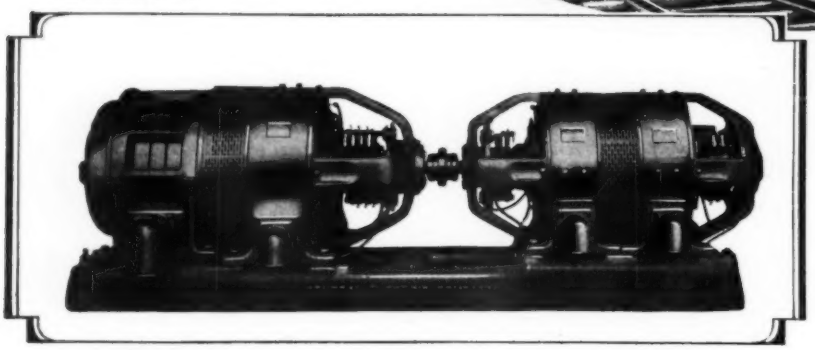


New Type Motor Generator for Electric Shovel



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Building the Overseas Highway.

1 — Cleaning Right-of-Way Through the Jungle with Bucyrus 30-B.
2 — Bucyrus 50-B Diesel Building Fill.
3 — Scarifying the Base.
4 — E. D. Jenner Sets Out on a Trans-Atlantic Flight but Runs Out of Gas and Has to Be Towed Ashore.
5 — A Bucketful of the Rock Used for the Overseas Highway.
6 — It Took the 50-B in the Background to Pull the Caterpillar Tractor Out of This Swamp Hole in "Mosquito Paradise."
7 — Bucyrus 26-B and D-2 Draglines Digging Rock.
8 — H. C. Jenner and His Pet Crocodile.
9 — Stripping Muck from Rock with a Bucyrus D-2 Diesel Preparatory to Drilling Pit.
10 — Fleet of Mack Trucks Starting Out After Lunch.
11 — A Portion of the Ocean Fill Between Upper and Lower Matecumbe Keys.
12 — Superintendent Ed. Frandsen Takes His Dog for a Ride Over the Job.
13 — Drilling for a Rock Pit with 1¼-inch Steel.
14 — Suction Dredge Pumping Marl.
15 — A Piece of Road Nearing Completion. This Gives Some Idea of the Clearing Necessary.

The
EXCAVATING ENGINEER

Vol. XXII JULY 1928 No. 7

Building the Overseas Highway

Jenner Brothers Construction Company of Davenport, Iowa, Building 57 Miles of Roadway Along the Florida Keys

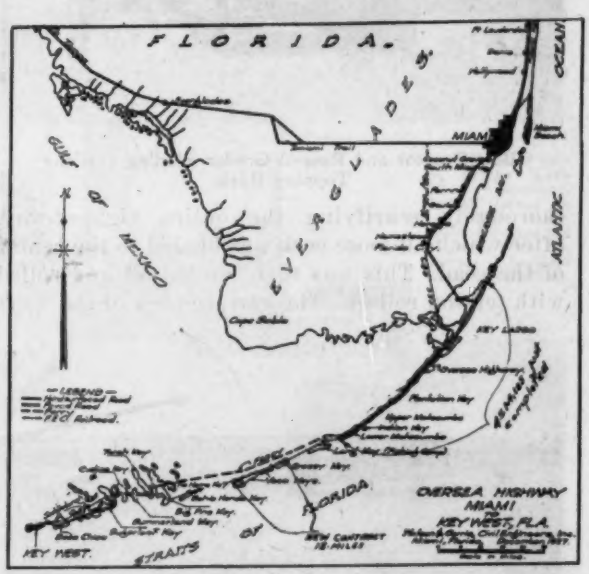
The Diesel Draglines Were Crowding the Drill Outfits Close at the Time This Picture Was Taken.

THROUGH jungles, along beaches, and over ocean straits runs the Overseas Highway, a beautiful wide automobile road connecting Miami with Key West. Here Jenner Brothers Construction Company of Davenport, Iowa, has just completed forty-five miles of road and are starting another section twelve miles long. All the work is in Monroe County, Florida, the completed section crossing and connecting Key Largo, Plantation, Windley, Upper and Lower Matecumbe Keys and parallelling the Florida East Coast Railway the greater part of the way.

The new section is on the Key Vaca group, and its completion will substitute two short water gaps for the long ferry trip now connecting the terminus of the Overseas Highway on Lower Matecumbe with No Name Key and the road joining that island with Key West. This new construction is contracted at $166,840 and is to be completed by November 20, 1928.

45 Miles Built for $800,000

The 45-mile section, which was built at a cost of approximately $800,000, included one-half mile of bridge work and two and one-half miles of ocean fills. The finished roadway is 18 feet wide except in the fill section where the width is extended to 24 feet. It required two years to build the forty-five miles, work having been started in December 1925.



EDITOR'S NOTE: We are greatly indebted to the courtesy and co-operation of Superintendent Ed. Frandsen in furnishing the material and photographs used in preparing this article.

Jungle Cleared with Draglines

The work included the clearing of a right-of-way 66 feet wide through virgin country. Three draglines, a 20-B, 30-B, and 50-B Bucyrus Diesel, were used for this work. Brush and trees were

The Operator on No. 4 Doesn't Seem to Have Any Trouble Putting the Bucket Just Where He Wants It.

pulled into a windrow in the center of the right-of-way and burned. In swampy sections trees were laid side by side in the form of a mat where they were used as a foundation for the base of the road.

The islands across which the road is constructed are low-lying coral keys, and there were practically no cuts necessary in grading the right-of-way. The base of the road grade was made by

Best Tractor and Russell Grader Blading Out the Topping Rock.

thoroughly scarifying the entire right-of-way, after which all loose rock was bladed to the center of the road. This was then leveled off and rolled with ten-ton rollers. The surface rock of the Keys is suitable for the base only, and finish rock had to be hauled from local pits.

1216 Cubic Yards of Rock in 10½ Hours

This finish material was placed on the base to a depth of 8 inches and 18 feet in width. Rock pits were opened by Bucyrus draglines, and the rock loaded into a fleet of Mack trucks for distribution along the base previously prepared. Superintendent Ed. Frandsen says: "Our D-2 Diesel, the first machine of this model sold by the Bucyrus Company, proved most efficient for this kind of work because of its speed and flexibility. It might interest you to know that one of our operators, T. B. Cook, and his oiler, A. G. Cun-

A Doby Shot with Draglines on Both Sides Waiting for the Rock.

nings, loaded 1,276 cubic yards of rock in ten and one-half hours with this machine. Loading was done with dragline attachments."

The rock pits were usually located on the ocean shore line or in swampy sections, where the muck was first stripped from the rock to make drilling possible. The texture of the rock varied considerably in different pits.

Up to 135 Drill Holes Fired with Kohler Light Plant in Single Shot

Drilling was done with Ingersoll-Rand R-72 hammers using 1¼-inch steel. These were driven from a 10 by 8 Ingersoll-Rand compressor. The holes were put down to a depth of 12 feet, the spacing varying according to the softness of the rock.

Barging Was One of Methods Used in Moving from One Key to Another.

Loading was with 1¼ by 8 inch 60 per cent du Pont dynamite fired with electric exploders, which were set off by current from a Kohler electric light plant installed on the dragline. By this method 100 to 135 holes were fired in a single shot.

Digging was done with all the Bucyrus draglines, namely a 20-B, 30-B, 50-B, and D-2, all Diesel operated. The 30-B and 50-B dug continuously day and night, while the 20-B and D-2 dug at night and loaded during the day. This procedure was necessary because of the fact that the rock could be loaded considerably faster than excavated, and, furthermore, this method of handling did away with the hauling of wet rock, which was undesirable.

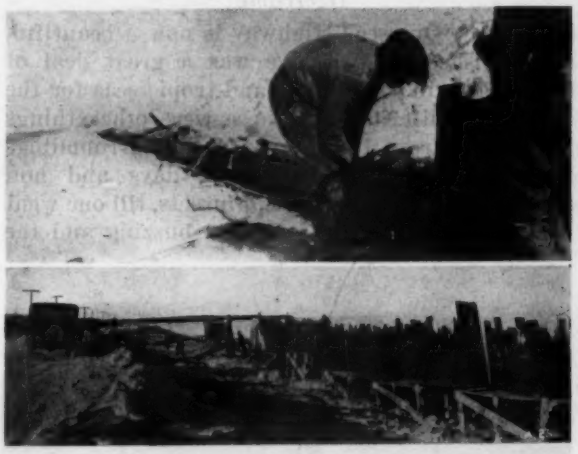
After the finish rock was dumped on the grade it was bladed and shaped, and then prepared for oiling by rolling and sprinkling. This resulted in a hard, waterbound surface. When thoroughly

The 30-B Is Digging and Casting into Stock Pile while the D-2 Diesel Loads Behind, Stock Pile to Trucks.

dry, it was swept and treated to a first coat of oil, sanded and then opened to traffic for 30 days. At the end of this period the surface was again swept and given a second coat. For oiling Texaco Special Macadam Binder was used and applied hot.

Marl Makes Excellent Base

The ocean fills, varying from 8 feet to 22 feet, consisted of one-half mile of highway built between Windley and Upper Matecumbe Keys and two miles between Upper and Lower Matecumbe.

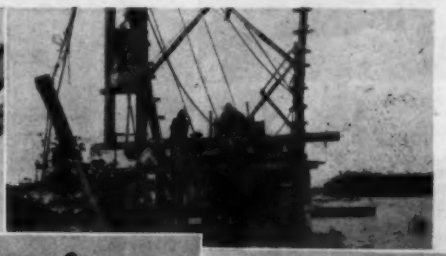


Driving Splash Boards with Air Hammer. Above: Cutting Off Splash Boards with Air Saw.

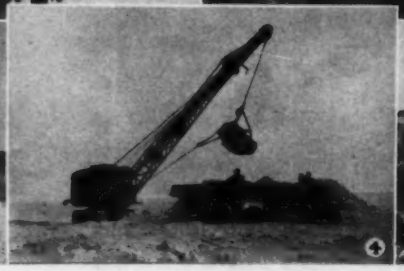
Here the base was constructed of marl, which was obtained from the ocean bottom by means of suction and clamshell dredges. This material makes an excellent road base, as it becomes very hard when exposed to the air. It is also capable of withstanding considerable wave action without washing.

When this base of marl was thoroughly dry it was topped with two and one-half feet of finish rock supplied from the dragline pits and hauled by trucks as previously described. Creosoted splash boards were then driven in the slope of the fill to protect it from wash. This line of splash

1 — Operator T. B. Cook and Oiler A. G. Cunnings on a Bucyrus D-2 Diesel Dragline. Machine and Crew Loaded 1,276 Cubic Yards of Rock on Trucks in 10½ Hours.



2 — One-half Mile of Bridge Work Was Required. E. D. Jenner Is in Center Foreground Facing the Camera, with His Bridge Builders Busy Setting Piles.



Construction Views Along the Overseas Highway.

3 — Blading the Ocean Fill with Caterpillar Drawn Blade. Florida East Coast Railway Embankment on the Right.

4 — Loading the Mack Trucks with Bucyrus 50-B Diesel Dragline.
5 — H. C. Jenner Spotting a Truck on the Fill.

boards consisted of two rows of one-inch by ten-foot creosoted boards which were driven as sheet piling by Ingersoll-Rand paving breaker air hammers equipped with pile-driving head attachments.

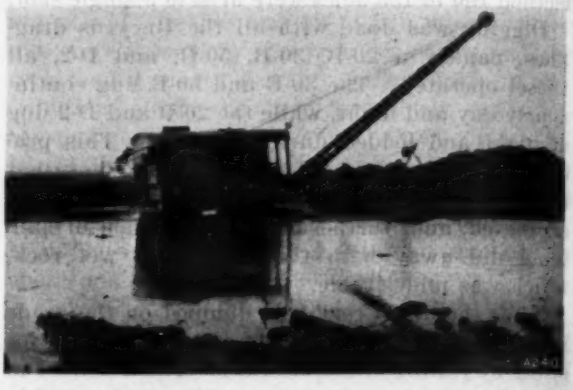
Obstacles — From Mosquitoes to Hurricanes — Overcome

The new Overseas Highway is now a beautiful, accomplished fact. There was a great deal of beauty, too, in jungle isles and tropic seas for the men who built it. But there were other things that often drove the beauty of the surroundings from their minds: hot, sticky days and hot, sticky nights, mosquitoes and insects, till one went near frantic with the continual buzzing and the

"Just a Game of Chance" Says Superintendent Frandsen. Bucyrus 50-B Diesel Nearing Its Destination After Having Forded Tavernier Creek with Water Up to the Flywheel in Places.

itch of innumerable stings, foul smelling, treacherous swamps, heat that seemed to press down upon you with an actual physical weight, and even thirst when the supply of fresh water ran short, as it sometimes needs must at long distances from source of reliable supply. And then there were the hurricanes which came shrieking on their errands of destruction.

"The mosquitoes and the hurricanes," remarked

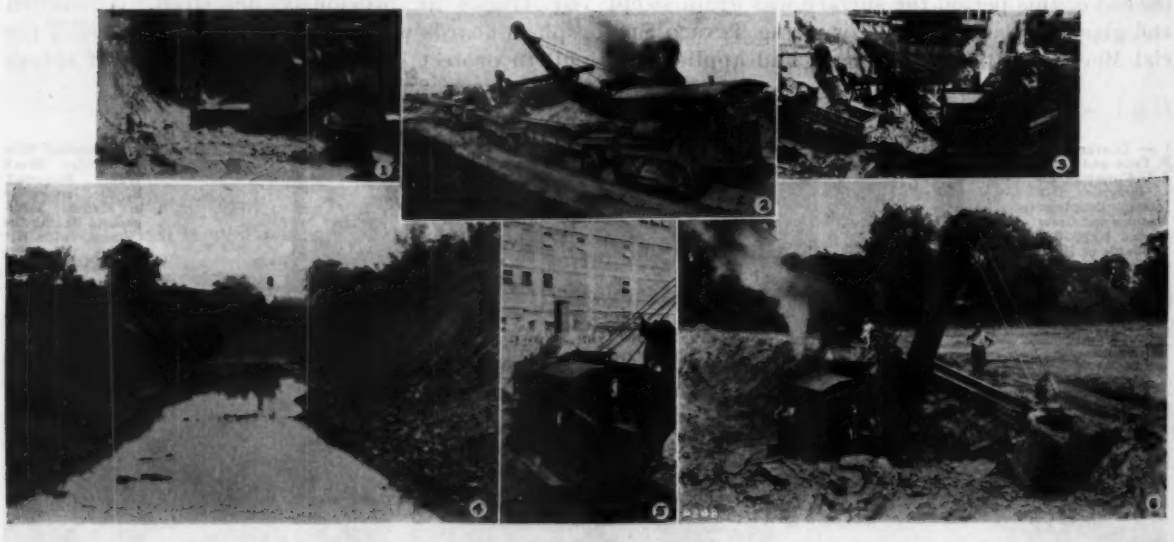


Down But Not Out. Stripping Muck for Rock Pit.

superintendent Frandsen, "I mention with emphasis, having had a concentrated dose of each." But to these men who have put through the construction of this wonderful road it was all worth while. The hardships only add a bit to the justifiable pride with which they can throw out their chests and say: "The Overseas Highway . . . I helped build that." As most of us know, the harder the job the sweeter the thrill that comes after the job is done.

E. D. and H. C. Jenner, who make up the firm of Jenner Brothers, were both actively on the job in charge of the construction. Ed. Frandsen was superintendent and Jack Killen had charge of

(Continued on Page 260.)



On Other Jenner Jobs.

1 — Basement for New American Commercial Savings Bank of Davenport, Iowa.

2 — Moving 123,000 Cubic Yards on a Road Job Out of McHenry, Ill., with Bucyrus 31-B and Western Crawler Wagons.

3 — Two Runways Were Used to Facilitate Truck Hauling on This Basement Job.

4 — Drainage Ditch Construction in Illinois.

5 — Quicksand Was a Problem in Digging John Deere Plow Company's Basement at East Moline, Illinois. Operator J. F. Sullivan Tells Us that His Machine Was Standing on Double Mats Laid Crossways at the Time This Picture Was Taken.

6 — Waiting for Trucks on the East Moline, Illinois, Job.

Working a Quarry with a Two Hundred and Seventy-Five Foot Face

Superior Portland Cement, Inc., Reduce Hazards by Opening Upper Bench

On Top of the World. The 2-yard Electric Shovel Cuts In on the 21-foot Level. Trade Mark of Superior Portland Cement, Incorporated, in Upper Corner.

AT Concrete, Washington, among the Cascades, about 30 miles east of Puget Sound and 70 miles north of Seattle lies the plant and quarry of Superior Portland Cement, Incorporated. The climate is quite an ideal one, cool in summer, with the temperature seldom above 85 degrees, and warm and rainy in winter, except for about two weeks in December and January when there is usually a light snow while the thermometer drops a bit below freezing.

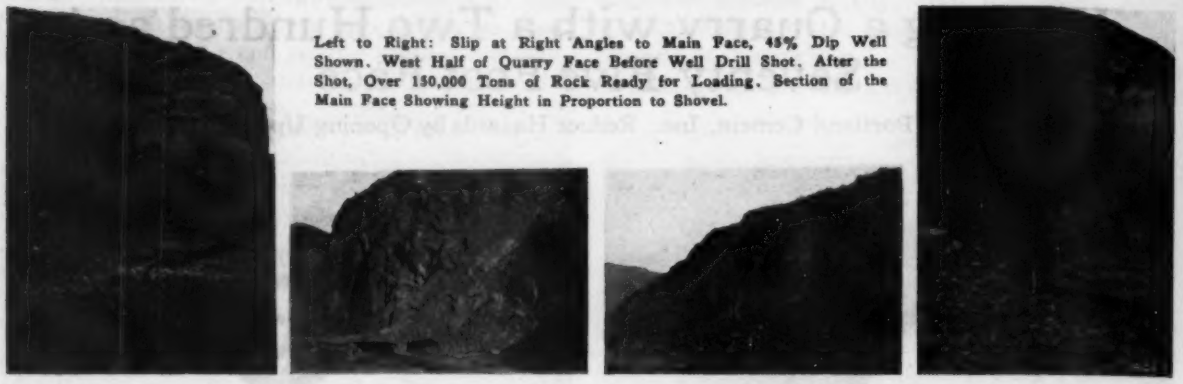
Beautiful Scenery Abounds. Small Stream North of the Plant.

At this modern and well-equipped plant is manufactured Superior Portland and Superior Waterproof Portland Cements. Recent independent laboratory tests show the waterproof brand to be ground about 96 fine on the 200-mesh sieve. During its manufacture certain waterproofing chemicals are ground into the cement, so that it produces concrete with the desirable qualities of added plasticity and water repellency. The principal distribution of the Superior products is west of the Cascade Mountains in the State of Washington and in Alaska.

Unusual Recent Development in Quarry Practice

The plant at Concrete is described in an article on the operations of the Superior Portland Cement, Inc., which was published in the June, 1926, number of *The Excavat-*

EDITOR'S NOTE: We wish to acknowledge the excellent co-operation extended by Superintendent Ambler in assisting us to secure the material and photographs used in the preparation of this article.

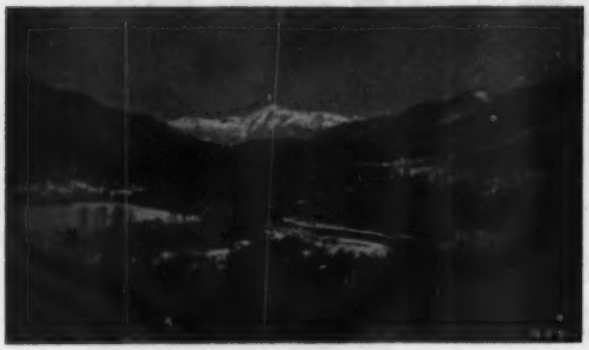


Left to Right: Slip at Right Angles to Main Face, 45% Dip Well Shown. West Half of Quarry Face Before Well Drill Shot. After the Shot, Over 150,000 Tons of Rock Ready for Loading. Section of the Main Face Showing Height in Proportion to Shovel.

Rock Views on Main Quarry Floor.

ing Engineer, and the present article is therefore confined to the recent developments in quarry practice.

The principal raw products used are gypsum which is shipped in mainly from Montana; coal from Bellingham, Washington; clay produced locally at a pit about a half mile from the mill by a clamshell derrick and hauled by trucks to the



Looking to the North from Quarry Mouth.

mill; and limestone carried from the quarry a mile and a quarter away over an aerial tramway.

Material for 50 Years' Operation Available in Quarry

The quarry has been opened along the face of a sugar-loaf-shaped hill which has a depth from the highest point to the quarry floor of about 500 feet. The material is a stratified limestone, folded and faulted with a dip of 45 degrees. There is enough material in the hill to supply the present mill for the next 50 years.

Four-Yard Revolving Shovel Replaced Two Railroad Shovels

Early in 1926 a Bucyrus 120-B electric quarry and mining shovel was installed here to replace two 60-ton Marion railroad-type shovels equipped with 2½-yard dippers. This change was inaugurated not only because of the economies possible with the modern, full-revolving, 4-yard machine which cut the cost of rock about 30 per cent, but also because of the comparative safety with which this machine can work under the high face (at that time 230 feet at the highest point). Previous slides had seriously damaged the old-fashioned railroad-type shovels standing close to the foot of the cliff. The heavy-duty electric shovel works farther from the face in its wider cut, and the easy mobility of its caterpillar mounting enables it to be readily moved at quitting time to a safe distance (about 100 feet) from the face.

As the quarry face, now about 1500 feet long, has advanced into the hill the height of the bank

The 120-B Is Nearing the End of the Car. You Can See the 50-B (Indicated by the Arrow) on the Upper Bench.

has been further increased until now its maximum is 275 feet. This developed a very dangerous working condition, even for the modern quarry shovel being used.

Solving the Problem of a 275-foot Face

To solve the problem presented by this condition it was decided to open an upper bench 210 feet above the quarry floor. For this purpose a second Bucyrus shovel, a 50-B 2-yard electric, was bought.

This 50-B was first used in building its own road from the present quarry level to the proposed second bench 210 feet higher up the cliff. The timber was felled and bucked over the section where the road was to go. The 50-B under its own power cast the logs aside and built the road which in some places has a grade as high as 20 per cent.

Roadway Up the Mountain Side Built by the Bucyrus 50-B. Above: View of Quarry Face Showing Rock Strata.

After the road was built, cutting of the upper bench was delayed until the overburden could be removed and the 50-B was brought back to the main level. Here it started another face at approximately right angles to the main face. The shovel was held on this latter work until the face was high enough to give a rather limited supply of rock. Since the capacity of the cableway was limited the 50-B was then shut down while the overburden was removed hydraulically from the upper level.

Moving Away from the Face for the Night.

Building a Stock Pile 210 Feet Below Shovel Operations

This spring the 50-B moved back to the 210-foot level and cut in on the upper bench, where it now casts the rock over the edge to form a stock pile on the main quarry floor below. While this stock pile is being built the four-yard shovel is digging rock at another place along the main face of the quarry. As needed the 120-B will remove rock from this stock pile, while the 50-B casts over to build up a second stock pile at another place. The rock from the upper and lower level, of slightly different content, is kept separate in the plant storage and mixed just ahead of the preliminary mills to produce the best possible grade of cement.

The 50-B requires one operator and one pitman, and on the preliminary work on the lower level has loaded about 700 tons per day. It has

Left: Electric Clamshell in Stockpile at Plant. Center: Filling Them Up with the 4-yard Electric. Right: Building a Road Up a Twenty-five Per Cent Grade with 50-B Electric.

made as high as 1000 tons per eight-hour shift, however. H. A. Warren is operating this machine.

Record of 2,273 Tons Produced by Big Shovel

The 120-B, operated by M. G. Munks, gets out the bulk of the rock and is fast enough to run ahead of the capacity of the trainway to the plant. In eight hours this machine has loaded as high as 2,273 tons while the average has been 1,530 tons.

Rock Storage with Train Discharge Terminal in Background. Above: Crusher Building at Quarry.

Three Tons of Rock per Pound of Powder

Drilling and blasting practice is rather out of the ordinary because of the very high face being worked. There are two Sanderson Cyclone and one Armstrong electric well drills using 8-inch bits on the job, two of these handling the work. Holes as deep as 275 feet are drilled 25 feet apart and 35 feet back from the face. The best depth for the holes has been found to be 8 feet below the level of the quarry floor. These are loaded with Trojan powder to within about 30 feet from the top of the hole. Five to six holes are the most shot in a group so far, and these produce from 150,000 to 170,000 tons of rock. This method produces about 3 tons of rock per pound of powder.

Safety has been given careful attention in both quarry, crusher and plant operation. All machinery is carefully guarded and the men have been educated to work safely by both personal instruction and safety publicity.

New 1¼-yard Electric Clamshell at Plant

A Bucyrus 30-B electric clamshell has been recently installed at the Superior Portland Cement, Incorporated, plant for stockpiling and reclaiming of rock and clinker. The clinker storage proper holds 120,000 barrels and up to 300,000 barrels are stored. The 30-B handles about 4000 barrels of clinker per eight-hour shift. It takes care of the daily surplus from the quarry over the amount used by the plant, and stores practically the entire daily output of clinker.

Superior Portland Cement, Incorporated, has been operating for over twenty years, and has today what is recognized as one of the most modern and efficient plants in the county with a daily output of 4,700 barrels of cement. The principal officers of the corporation are: John C. Eden, president; C. N. Reitze, vice-president and general manager; Geo. E. Dickinson, secretary; Gordon Tongue, treasurer and sales manager; C. L. Wagner, general superintendent; H. A. Ambler, superintendent.

Building the Overseas Highway

(Continued from Page 256.)

drilling and blasting. The same personnel are now busy on the new job on the Key Vaca group.

Jenner Brothers Handle Numerous Other Jobs in Fast Time

Jenner Brothers are handling a number of other earth-moving jobs in Illinois and Iowa in addition to this Florida work. Last year they graded 8⅓ miles on Route 61 between McHenry and Crystal Lake, Illinois, involving 123,000 cubic yards of

This Basement Digging in East Moline, Illinois, Was a Wet Job, Too.

excavation. This work was in charge of E. D. Jenner and was handled by a Bucyrus 31-B and an elevating grader for the light cuts. They also had two machine outfits grading road between Bennett and Durant, Iowa.

Among other recent jobs was the basement for the John Deere Plow Company at East Moline, Illinois, and basement for the American Commercial Savings Bank in Davenport, Iowa.

Giant Shovel Moves One and One-Half Miles

Harrisburg Coal and Mining Company Make Long Move with Bucyrus 225-B Shovel

Looking Up the Seven Per Cent Grade. Fred O'Brien, Superintendent, in Foreground.

RECENTLY when their old pit was exhausted, The Harrisburg Coal and Mining Company of Harrisburg, Illinois, were confronted with the problem of taking their Bucyrus

The Stripper Is Here Almost Up at the Top of the Climb.

225-B steam shovel out of the old pit and moving it a mile and one-half to new workings at their Mine No. 8.

The shovel was moved under its own power, digging out of the pit on a seven per cent grade without difficulty. No cribbing was used nor was the digging speed retarded, as is attested by the fact that the shovel made the seven-hundred-foot cut in six working days, starting with 49 feet of overburden. No trouble was experienced with broken propelling chains, and by sanding the rails it was found that the shovel climbed easily without the machine slipping.

It required fourteen days of three eight-hour shifts to move the shovel across the one and one-half miles to the new pit. A pit crew of eight men on each shift with one team and one single mule handled the track work. The single mule was used to drag ties and rails, while the team handled ties for cribbing ditches. The surface was fairly level, and traveling was not difficult with the exception of one place over an old lake bed where there was about two feet of hard surface under which was four feet of soft muck. Cribbing had to be used at this point, and unfortunately in crossing one end of the shovel slipped off the cribbing and sunk down until the dollie circle was

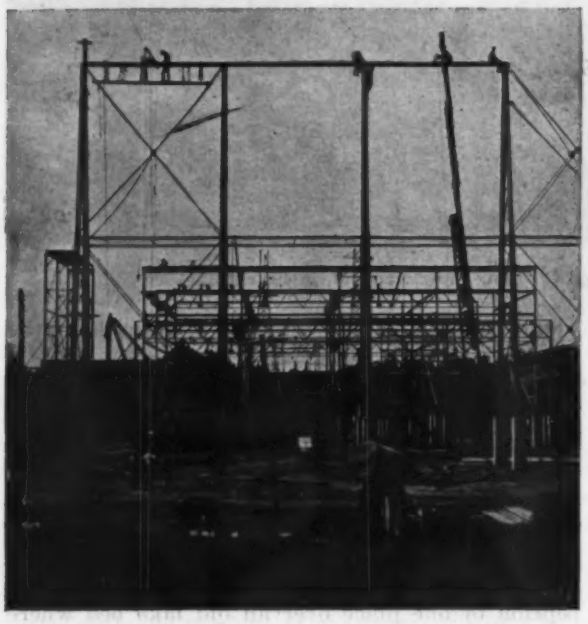
Behind the Stripper You See the Cut Grade, and in the Distance the Coal Loader.

level with the surface and the revolving frame was inclined at a forty-five degree angle. It required three days of nine-hour shifts to jack the shovel up out of this hole.

The shovel operators who took the big machine across country were H. H. Bordens on the first shift, Claud Ingram on the second shift and Leo Shetler, third shift. Fred O'Brien, superintendent for the Harrisburg Coal and Mining Company, was in charge of the move.

At Mine No. 8 the shovel will be engaged in stripping 3,200,000 cubic yards of earth and shale which overlays the 800,000 tons of coal available in this pit.

Setting Steel with a 72-foot Boom



Lifting Loads as High as 2500 Pounds with 72-foot Boom.

Considerable ingenuity was displayed by The L. E. Myers Company of Chicago in setting steel for the first section of a 60,000 k.w. steam plant at Weleetka, Oklahoma. E. C. Deavonshire, superintendent, put an emergency extension on the boom of their Bucyrus 31-B steam dragline and clamshell. Two timbers were spliced with U-bolts, the boom lowered and these timbers attached. The boom was

Quick Moves Made This Dragline-Crane a Money Saver for Setting Structural Steel.

then raised, the end of the hoisting cable being run over a sheave on the extension boom. This extension gave a boom length of 72 feet, and the shovel succeeded in maintaining a 30-foot radius and lifting loads as high as 2500 pounds. As the machine with its caterpillar crawlers could move quickly wherever needed, this arrangement proved to be a very convenient one.

The shovel was also equipped with a pile-driver attachment, and used to drive the sheet piling required in the excavation of the condenser pit.

On Mexican Irrigation

Al Jonsoni, operator, sends us these pictures of the Bucyrus 50-B Diesel he is piloting down in Mexico. The dragline is cleaning out around one of the new dams in one of the big irrigation projects under way down there. Al says the thermometer hovers around 110 in the shade, and the coolness and cleanness of the Diesel is a thing to be thankful for. He also mentions that the machines are nice to handle and there are very few repairs to bother with.

Al Jonsoni is working for the J. G. White Corporation on irrigation contracts which they are handling for the Mexican Irrigation Commission.

FIELD NOTES

A Simple Spring Switch

Perhaps many old timers have used this rig when they found themselves up against it for a spring switch. However, it is a very cheap and simple rig and is a remarkable time saver if you don't happen to have a regular spring switch on the job. The device is very simple to make, the materials can be found on any job and it will speed up operations and save labor.

A small tree or bough about three or four inches in diameter and eight or ten feet long, with plenty of spring, a couple of pieces of chain and a small block of wood are all the materials that are needed to change one of your regular switches to an automatic one.

The big end of the bough is fastened close to the rail the length of the stick away from the switch points. The small end of the sapling is chained under the main rail to the switch rod. The center is forced away from the rail to put the pole or wooden spring under tension by a block put in at the spring or small end of the pole and driven down toward the big end, which is chained close to the rail, until the right tension is obtained. If the tension is lost by the drying out of the sapling the block can be driven further down. It may be necessary to replace the sapling occasionally.

The installation of this home-made spring switch was made by C. A. Phylo, Superintendent of West Allis, Wisconsin, working on a job at Waukesha for A. B. Lynch.

Right Lay — Lang Lay — Left Lay — Regular Lay

By Oscar Hellgren, *Wire Rope Splicer, East Chicago Plant, Youngstown Sheet and Tube Company*

A Perplexing Wire Rope Problem Solved

Through my contact with several operating engineers who work in various plants throughout the Chicago district, I have noted a marked confusion of thought among these men as to the basic difference between the seemingly conflicting terms set down as the title to this paper. The exact province of the varying kinds of "lays" — just what each means and where each belongs — is not so thoroughly understood as it should be, even by men who are eminently capable as operating engineers. To the old hand, of course, these terms are elementary. For many, however, — even extending to those in supervising or purchasing capacities — the terms that are so essential to intelligent use and application of wire rope seem only to contribute to clouded understanding and erroneous impressions. It is with the thought that much of this confusion might be clarified that I am setting forth the following facts.

Perhaps it is not to be wondered that many engineers carry impressions similar to one operating friend of mine who believed that "Lang Lay" was a trade name signifying an individual brand of rope, or to a maintenance man of my acquaintance who seemed quite surprised to learn that "Tru-Lay" did not signify a particular type of rope that differed in construction from ordinary ropes.

At another plant an engineer was found who entertained the fallacious belief that "Right" and "Left" lay had no relation to either "Lang" or "Regular" lay; while yet a fourth friend of mine, a locomotive crane operator, insisted upon ordering his rope by such specifications as: "7/8-inch — 6 x 19 Plow Steel," expecting the rope manufacturer to supply his order without delay or confusion.

What "Construction" Means

Just a word about the constructions of wire rope may be helpful to many. The wire rope that is commonly employed for practically all commercial purposes is made up into any one of 42 different constructions, and in any one of six varying metals. There are, of course, many more than 42 different and distinct constructions, but by far the greater percentage of all wire rope service is performed by one of the 42 standard constructions. These varying constructions are designated by names such as "Seale," "Spacer Seale," "Warrington," "Tiller," etc., etc.

Practically all these several constructions are available in any one of six grades of material, which are: "Iron," "Toughened Steel," "Cast Steel," "Mild Plow Steel," "Plow Steel" and "Improved Plow Steel." While it is quite impossible to set up an arbitrary table of wire rope application to definitely limit the province or define the service of any one rope, it yet remains that each of these 42 constructions and six different grades have places where they serve best and other places where, because they would be misapplied, they would fail to give their full service life.

In determining just which type of wire rope will best meet given conditions it always pays to consult a qualified rope engineer. Only through a knowledge of the working requirements and the condition of the auxiliary equipment can wire rope properly be specified.

Construction or grade of rope has no influence on its "lays," however. For instance, a 1¼-inch 6 x 19 Spacer Seale (which is to say: a 1¼-inch diameter rope that is made up of six strands of 19 wires each and in accordance with a construction known as "Spacer Seale") might be either Left Lay Lang Lay, Right Lay Lang Lay, Left Lay Regular Lay or Right Lay Regular Lay.

(To be continued in the next issue of The Excavating Engineer)

The United States now has 666,900 miles of improved highway, according to the American Road Builders' Association. There is a great demand for additional improved highways in the secondary system.

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The Business Situation

During the past month there has been no very marked change in the activity of business. The general feeling of business men seems to be more confident than in the immediate past and fundamental conditions are favorable — as they were a month ago.

As the National City Company points out it is not always the level of business activity which is of the greatest importance; oftentimes the trend of business is the more important consideration.

Although the present activity of business is not up to the highest levels of some past periods, manufacturing and distributing are nevertheless in large volume and fundamental conditions are favorable. Furthermore the trend at the present time is definitely upward, while the trend of a year ago was steadily downward after the first three months.

It is interesting to note the monthly business map of the Magazine of Business, published as the consensus of opinion of many business men. The map is covered with flags indicating "above average," "average," "below average" or "distress." On the map for June the "above average" flags predominate.

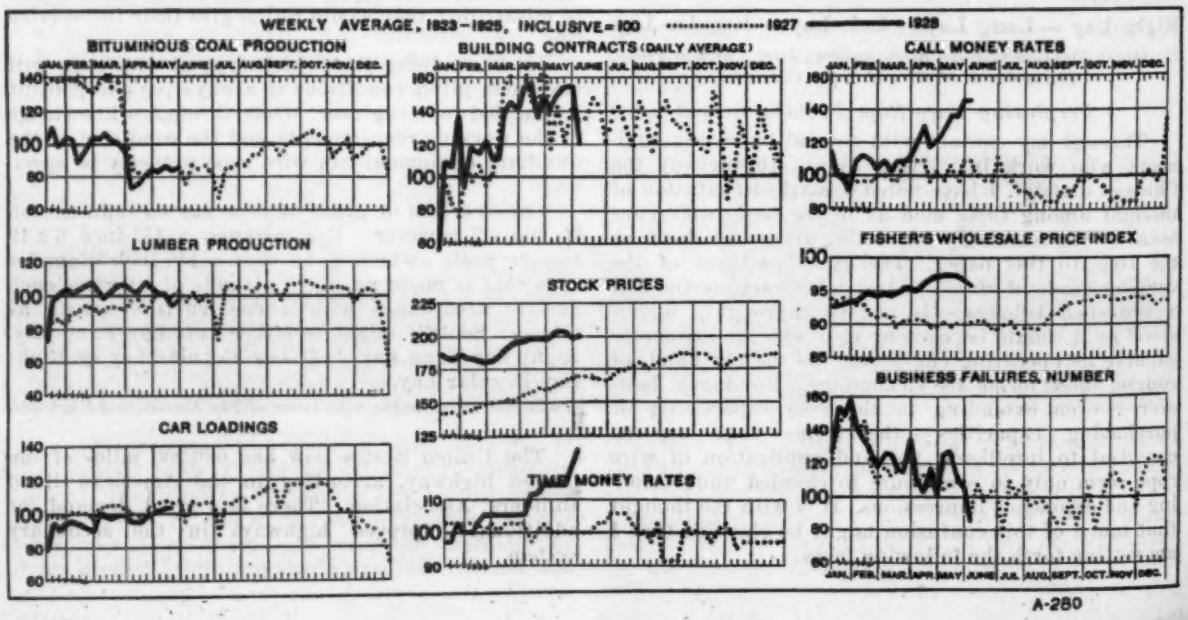
As for several months past, the construction industry has been one of the bright spots in the business situation. New building and engineering work contracted for in 37 states east of the Rocky Mountains (about 81 per cent of the total country) during the past month amounted to $668,097,200. F. W. Dodge Corporation reports this to be the highest month ever recorded in these states for construction started. It tops the previous high record of April 1928 by about 25 million dollars. The increase over May of last year was 21 per cent.

The combined total for new construction started during the first five months of this year is also a record-breaking figure. The total for the first five months of 1926 held the record up until now. This year's figure, amounting to $2,796,301,300 is 9 per cent ahead of the total for the first five months of last year, and is 7 per cent over the total for the corresponding period of 1926.

Analysis of last month's contract total showed the following important classes of work: $288,825,800, or 43 per cent of all construction, for residential buildings; $150,223,200, or 22 per cent, for public works and utilities; $91,200,200, or 14 per cent, for commercial buildings; and $47,851,000 or 7 per cent, for educational projects.

New work planned in the 37 Eastern States during the past month amounted to $882,244,700. This figure is 4 per cent ahead of the amount reported in the same month of last year, and is 6 per cent over the amount reported in the preceding month of this year.

Adverse weather conditions have been one cause of backwardness in business, and perhaps



A-280

the chief dangerous spot has been the excessive amount of speculation on the stock market. Visions of easily made riches are tending to destroy the usual habits of saving, and millions of dollars are being put into the market by many who can ill afford the risks they are taking. Never before has stock speculation involved so many people of all classes, and the danger is that with so wide a public participation in the market a decline, which is always possible after so prolonged an advance, would reduce general consumer purchasing power and slow up the distribution of commodities.

The tightening of the money market which has continued during the past month is therefore not a bad sign for business. This tightening will not reduce the funds available for legitimate business purposes, but it will help to curb this excessive speculation, and it is toward this result that continued export of gold and the Federal Reserve Banks money policies are directed.

Here are some of the reasons for expecting good business in the immediate future:

Inventories are low.

Commercial indebtedness is small when the volume of business being done is considered.

An evidence of a better demand for goods is shown in a firming tendency of commodity prices.

Cost Studies of Slate and Crushed Stone Industries

Following conferences held with the Secretary of the National Slate Association and with a number of the leading slate producers to ascertain how the Bureau of Mines might best assist that industry, it has been determined to undertake a study of production and marketing costs. Costs constitute the backbone of most economic studies, it was pointed out. A cost schedule is being prepared. The National Crushed Stone Association, at its recent convention at West Baden, Indiana, voted unanimously to co-operate with the Bureau of Mines in a detailed study of production costs. A cost questionaire has been prepared and will be forwarded to approximately 2500 operators.

Virginia Highway Construction

The recent report of the Virginia State Highway Commission covering a two-year period ending June 30, 1927, shows addition of 196 miles to the State Highway System in 1926 and 206.33 miles in 1927.

The same policy of building a large percentage of high-type surfaced roads has been continued, and no surface is being constructed at present less than 18 feet in width. A close study has been made of all road-building materials used in various sections of the state, and a demonstration section of road has recently been completed on the Lee Highway from Centerville to Gainsville, a distance of ten miles. Practically all materials and methods of finishing and manipulation of materials known to the science of road building has been used on various sections of this 10 miles for the purpose of ascertaining the behavior and worth of various typical sections of concrete construction.

This work has been done in co-operation with the Bureau of Public Roads, who have had experts studying the actual handling and behavior of the materials throughout the entire work and will continue these studies in co-operation with the Highway Department in the future.

Convict labor is used largely in Virginia, the number of prisoners last year having been increased to eighteen hundred. Addition of several hundred more have been advised for the coming year. Studies are being made of all camps to work out a plan for more efficient operation of this force. It has been recommended that a reward be offered in the way of shortening the convict terms by two or three days for each month of efficient service. This, in addition to time off for good behavior, will greatly increase the efficiency of the entire force and gives an earned reward to those who deserve it.

There has been a reduction of about 10 per cent in the cost of road construction which has, however, been almost entirely absorbed in the additional cost of building safer and better roads.

Nearly nine million dollars are to be used for road construction purposes for the coming fiscal year.

In South America

Here are two pictures from Colombia, showing operations in connection with the quarrying of rock for river jetties.

These show a Bucyrus 78-C railroad-type shovel stripping overburden. A Bucyrus 120-B steam shovel is also loading rock in the same quarry.

The lower picture shows superintendent and crew posed for the camera, while the shovel waited for cars.

DEVICES YOU OUGHT TO KNOW ABOUT

Bucyrus-Erie Announces the New "1030" ¾-Yard Gas Shovel and Crane

Remarkable performance has already been demonstrated by the Bucyrus-Erie "1030" gas shovel, crane and dragline in actual field service. The machine, now put out in quantity production, was first exhibited at the Cleveland Road Show in January where 1200 experienced construction men estimated the price at an average of $962.00 higher than the actual price placed on the machine.

High speed and power to handle hardest digging or heavy loads, combined with trouble-free operation and long life, are confidently assured by the manufacturer. The "1030" has a 72½ horse power gasoline motor, a radical departure from previous designs in this size machine, giving 30% more power than has ever been provided in any ¾-yard gas shovel or crane. This not only gives additional power for digging but permits development of higher speed throughout the entire digging cycle. To make greatest use of the greater hoist line power, the weight of the machinery is placed entirely in the rear of the center pin, giving an extra margin of counterbalance.

To take care of this greater speed big oversize contracting clutch bands are used, with a large brake of the contracting shoe type to stop the swing. This separate brake permits faster operation and adds extra life to the swing clutch. Larger clutches are used — outside band clutches, simple and easily accessible.

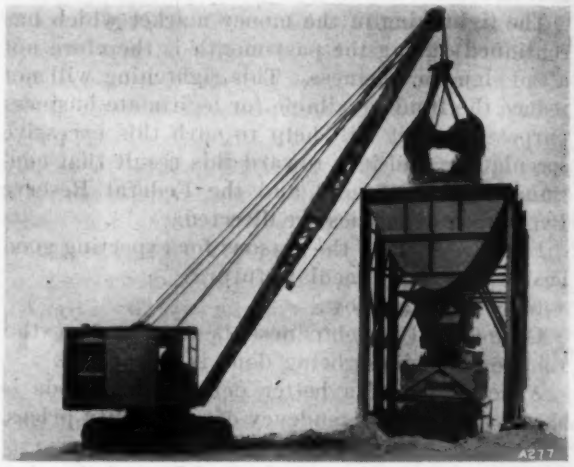
Swing gears completely enclosed and running in oil are held in positive and permanent alignment by a steel box housing insuring perfect meshing.

In looking over the machine one cannot help but

notice the sturdiness of construction throughout — the drum shaft is 5½ inches in diameter, the swing clutch shaft 3⅝ inches, the truck frame is a one-piece steel casting, the revolving turntable is also a single steel casting — and so it goes throughout the machine.

Increased use of ball bearings insures smoother operation and more efficient power transmission, and to give perfect alignment only two bearings carry each shaft. All high-speed gears are enclosed and run in oil so that the oiling job consists of merely checking up the oil level every week or so.

The convenience of the operator has been given careful consideration in designing the "1030": easily



operated control levers are conveniently located with auxiliary clutches setting the large clutches entirely by power. Even the steering is handled by the operator without leaving his seat. A roomier cab gives accessibility to every working part above the deck.

The machine is equipped with the latest development of the Bucyrus-Erie "Single Shaft Drive" caterpillar-type mounting which was described in our April issue. It provides perfect control and easy steering from the operator's seat with the cab in any position, simple, trouble-free operation with only one drive shaft gear and pinion below deck, the gear being well up out of the dirt completely housed and running in oil. The two-way brake is a valuable feature, locking the machine in either direction, while permitting free travel the other way.

New Mounting for Lincoln Arc Welders

A new mounting of the Standard Lincoln Electric Stable Arc Welders has been announced by the Sales Department of the *Pontiac Tractor Company, Pontiac, Michigan.* The welder unit with stabilizer and panel are mounted on a frame, which attaches to either the McCormick-Deering 10/20 or Fordson tractors. This mounting of the Pontiac Lincoln arc welder gives a four-wheel, rubber-tired, self-propelled unit, capable of hauling heavy loads behind itself. This unit is also mounted on crawlers for soft ground work.

SHOTS FROM THE FIRING LINE

Eastern States Notes

Harry M. Waugh, railroad contractor, is in the market to buy a sand and gravel plant, consisting of washing and screening plant bins and conveying equipment, capacity about eight hundred tons daily.

New England Notes

BY J. C. ALEXANDER

We have just received cards announcing the forthcoming marriage of Miss Mary Veronica Lanza, daughter of Frank Lanza of Frank Lanza and Sons, well-known contractors in Boston, to Mr. Louis Julian.

The University Excavating Co., Cambridge, Massachusetts, are keeping very busy this year. Cellar jobs are their specialty, and Mr. Hull and Mr. Palaza surely keep things moving.

Ira Earls, operator of J. C. Coleman & Son Company's 31-B, is busy making grade for the resurfacing of River Street, Boston.

A great deal of work being let by the Highway Departments of the New England States is comprised of relocations. The "cow paths" are being straightened out and grades reduced. This insures considerable shovel work for the next few years.

Recent successful bidders on road work are Amos D. Bridges' Sons, Inc., Hazardville, Connecticut, a section of concrete road in Maine; P. J. Holland, a four-mile heavy grading job in Vermont; B. Perini & Sons, several sections throughout New England.

Bucyrus-Erie Company have moved their Boston office to 240 North Beacon Street, Brighton District, Boston, Massachusetts. The boys from the Boston office say: "Yes, thank you, we like our new office and service station fine. Why not come down and pay us a visit some time soon?"

Canada

Montreal and Vicinity

BY J. M. WARD

Roger Miller & Sons are making good progress on their stripping contract for the Asbestos Company of Thetford Mines. They are using a Bucyrus-Erie 100-B steam shovel and Western 12-yard cars.

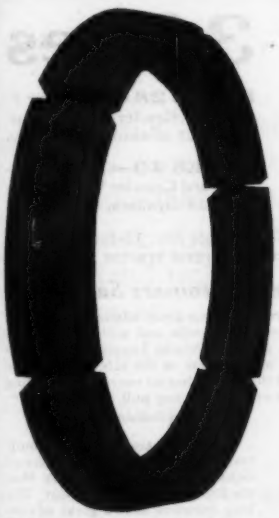
Mitchell & Wheaton, Dexter & Richards and Currier & Seymour have secured highway contracts from the New Brunswick Provincial Government.

Dexter & Richards are using a B-2 Erie, Barber Greene bucket loader and trucks.

Currier & Seymour are using a B-2 Erie.

W. L. Derousie is running a Bucyrus 110-C shovel for the Dominion Trap Rock Co. at Bruce Mines, Ontario.

Gorman & Peckham, who are working with P. Lyall & Sons on their Back River contract, have been held back considerably with the extremely wet weather, but are gradually getting under way. They are using a Bucyrus 20-B and



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SHOTS FROM THE FIRING LINE — Continued

Bucyrus-Erie Gas + Air shovel and a Byers Bearcat, Vulcan steam and gasoline locomotives and 6-yard cars.

P. Lyall & Sons are getting well under way on their power contract for the Power Corporation at the Back River, Montreal. They are using three Erie shovels.

L. A. Ott & Co., Montreal, are very busy on excavating contracts in the City. They are keeping their two 20-B Bucyrus shovels and the B-2 Bucyrus-Erie working all the time.

Tenders for the 60 miles of the Quebec and Chicugamoo Railroad have been extended until the 18th of June. It is expected that work will start early in July.

Buffalo and Vicinity

BY D. E. WHITE

Charles Rossow & Sons two Erie Gas + Airs are just completing 48,000 cubic yards of rock excavation for new school stadium in Buffalo, New York. Shovel engineers Allen and Prefontaine send their regards.

Canty, O'Neil & Candell are doing excellent work on their latest road job, regardless of weather conditions, which have been bad owing to rain.

John W. Cowper Construction Co. sublet to Moebius Trucking Company the excavating on a new down-town office building. They are using D. E. Horton's Erie piledriver which is carrying a 55-foot boom on a ¾-yard Erie. They are also renting Schreier Bros. Erie to do the loading.

Our friend Francis Cadin, the popular young contractor from Syracuse, New York, is away ahead of schedule on his road project in Wayne County, Union Hill, Ontario Center. Our friend Mr. Hopkins is handling the grade.

Recently called on our friend Frank J. Boland of Johnson City, New York, who just returned from Florida and is putting the old pep into his business with the help of his able brother Leon.

Richard Hopkins, popular official of Associated General Contractors, is summering at Raquette Lake while completing his big road project, and is quite enthusiastic over his two Bucyrus-Erie shovels and the work they are doing in the rough country.

This Long Reach Is Easy for Mr. Trowbridge's D-2.

D. H. Trowbridge, at Ticonderoga, New York, is doing some very nice work on the project he has there; in fact, he really has two projects under way. Bad weather has held him up for a short time but he is still maintaining traffic on the roads he is constructing. He is using the Bucyrus D-2 shovel, the Bucyrus 20-B steamer and a Bucyrus 30-B. He is also using an Osgood in his quarry, cutting out rock for his subgrade. Mr. Trowbridge's cousin who is operating the D-2, states he much prefers the Diesel to any steam machine he has ever operated.

Was on John Rust's job at Indian Lake where they are using two Type "B" Erie steam shovels; also a P. & H. gas. Found our friend Mr. F. J. Standard in charge, doing very

Bates Tractors

BATES 70

3 Sizes

BATES 28 — Made for 8-foot Graders and equipment of similar capacity.

BATES 40 — Made for 7-yard Crawler Wagons, 10-foot Graders, etc.

BATES 70 — Made for 12-foot Graders and any of the largest tractor tools.

What Bates Customers Say:

"The long crawlers are a great advantage and the tractor is very easy to handle and will turn around squarely. I use it on an Austin Leaning Wheel Rip Snorter Grader which is one of the largest made for contracting, and the tractor has an easy time handling it and it is never crowded by any pull."

— An Indiana Contractor.

"The Bates tractor is a well-built tractor and the Bates people are all right to deal with. I think that the Bates "40" is hard to beat. The long crawlers have a great advantage over the short ones."

— An Iowa Contractor.

Write for New Catalog.

Bates Manufacturing Company

JOLIET, ILL., U. S. A.

Established 1883

Pioneers in the Tractor Industry

100 ABOVE

An elevating grader loading a Western 7-yard wagon. Jones & Rodgers levee contract. The motorized outfit is working 24 hours per day in spite of the extreme heat.

or 10 BELOW

The Western 7-yard wagon working 24 hours per day in midwinter on G. P. Scharl's road contract at Mona Lake, Michigan. Notice the sand frozen to the wheels and crawlers.

EXTREME heat or cold has no effect on the ability of the Western Crawler Dump Wagon to get the work out. Long hours do not tire a motorized unit and mud or sand cannot stop it.

Any time, any place, your crawler tractor can go, this big Western wagon can follow—24 hours a day, speeding up your hauling, increasing your production, lengthening your working season.

Bulletin 27-SE tells the astonishing story of its performance.

[*Write today*]

WESTERN WHEELED SCRAPER COMPANY
Aurora, Illinois

WESTERN

DUMP CARS AND GRADING EQUIPMENT

In writing to Western Wheeled Scraper Co. please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

nice work, and he expects to spend the rest of the summer in that territory moving dirt and fishing.

Our friend Jim Hill, general superintendent for Richard Hopkin's outfit of Albany, New York, who are also on a project at Indian Lake, is striking some very hard digging consisting of much rock, sand, gravel and hardpan. They are using trucks, teams and Lynn tractors, and are getting out very good daily averages considering the job of digging they are in. A. Nivers is operating one Gas + Air and "Heavy" Walstrum is on the other.

Paid Frank Ursitti Construction Company at Raquette Lake a visit, and found the subcontractor in mountainous territory, where he was fortunate, with all the rock, to find plenty of sand to use two elevating graders. Mr. Ralph Dutcher, is the subcontractor, and at the time this contract was let the contractors in the East thought it would be at least a three-shovel job. The District Engineer, Mr. Misner, of the New York State Highway Department, has already complimented Mr. Dutcher on the nice work his elevating graders have done since he has been on the ground. The material they are handling is a sandy loam and they are working on an elevation of 1800 feet.

W. E. Chetwin of Syracuse, New York, just recently landed a nice piece of work consisting of some 30,000 odd yards of excavation. He expects to use both his Gas + Air Erie and his steam Erie on this work. Our old reliable Charley French is operating the Gas + Air while our friend "Hutch" is in charge of the steam Erie.

Pittsburgh District Notes

BY P. B. HEISEY

We had a very pleasant visit with our old friend George Crumrine, superintendent for Cole Bros., Morgantown, West

Cletrac
Crawler Tractors

FOR excavating, earth moving, hauling, grading and road work, Cletrac Crawler Tractors offer by far the most efficient, capable and economical type of power unit. They are built in a complete line to cover the entire range of power requirements.

It will pay you to investigate Cletracs, their greater power, traction and speed, their easier control and shorter turning, "One-Shot" instant lubrication and many other distinctive features.

Write today for literature.

The Cleveland Tractor Co.
Cleveland, Ohio

"It has given the very best service!"

Superior Working Features

In the opinion of this Southern Contractor, these are a few of Buckeye's superior operating features: power-steering device, all working parts easy to service, heavy construction, high-class power plant, and chain drive over gears. Note how readily the reversible power-operated conveyor can be quickly shifted for close as well as distant dumping — *on either side.*

A PROMINENT Southern Contractor bought this Buckeye Model 203 because, in his own words, he "*thought* it was the best on the market."

But actual performance, right on the job, is the final test of a trench excavator's worth. So, after months of operation in all sorts of soils and under all kinds of conditions, Mr. Contractor was asked whether this Buckeye had measured up to his confidence.

His reply was brief, direct and convincing — "*It has given the very best service.*"

By such performance, every Buckeye sells others. That accounts for re-orders comprising the largest percentage of our business.

The
Buckeye Traction Ditcher Company — Findlay, Ohio

There's a Buckeye Sales and Service Office Near You

for over thirty years
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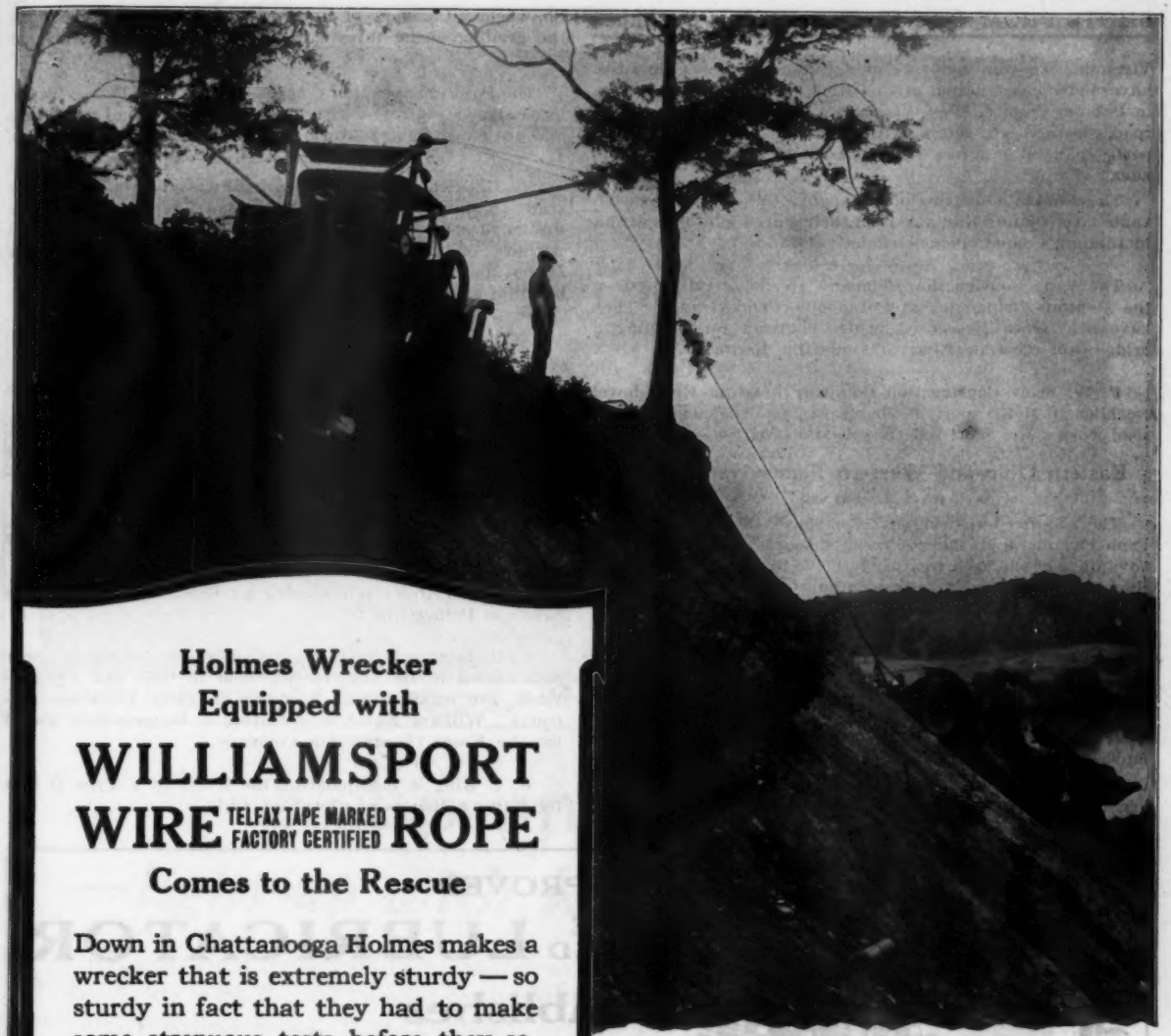


Holmes Wrecker Equipped with

WILLIAMSPORT WIRE TELFAX TAPE MARKED FACTORY CERTIFIED ROPE

Comes to the Rescue

Down in Chattanooga Holmes makes a wrecker that is extremely sturdy — so sturdy in fact that they had to make some strenuous tests before they selected the Wire Rope that would stand the abuse it was due to get. The picture shows why. The cable had to be small in diameter, but must be powerful and stand an extraordinary test.

Williamsport is the Wire Rope they selected.

It dare not fail. It doesn't fail.

WILLIAMSPORT WIRE ROPE COMPANY

Main Office and Works:
Williamsport, Penn.

General Sales Offices:
Peoples Gas Bldg., Chicago

Use Madesco Tackle Blocks — They Stand the Gaff.

In writing to Williamsport Wire Rope Co. please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Virginia, who was in to see us a few days ago. Cole Bros. have under construction at this time twelve miles of paving in Preston County, West Virginia. This is the largest state road contract ever let in West Virginia. Mr. Crumrine reports splendid progress on the work and expects to finish ahead of time.

The Rankin Construction Company, Uniontown, Pennsylvania, are running way ahead on their state highway contract in Indiana County, Pennsylvania.

The Vang Construction Company are going full speed on the Montour Bridge job at Coraopolis, Pennsylvania. They have also recently secured bridge contract for building a bridge over the Ohio River at Louisville, Kentucky.

F. W. Scott Construction Company have an Erie shovel working at McKeesport, Pennsylvania, on Allegheny County road work. Mr. Scott reports splendid progress on the work.

Eastern Ohio and Western Pennsylvania Notes

BY J. M. SIMPSON

The State Construction Company, New Kensington, Pennsylvania, and their several subcontractors are taking advantage of the good weather to make things "hum" on their thirteen-mile job in Armstrong County. Over 300,000 cubic yards of dirt to be moved and thirteen miles of concrete to be poured; in addition several bridges and hundreds of feet of retaining walls make this the largest job let by the state this year. Thirteen shovels are at work on the grading. Only nine were required by the Highway Department, but Mr. Murray, general manager, believes in plenty of equipment in order to keep things moving smoothly so they can finish ahead of time.

Johnstown's prominent contractors, James & Nicholson, are making good progress on their Dauphin County work. Shawfield & Company of Harrisburg, Pennsylvania, are doing the grading, using three Erie steam shovels and a fleet of trucks.

The Paul Construction Company of Cresson, Pennsylvania, have signed contracts with the State Highway Department and are ready to start work on their Huntington County job.

H. E. Richards of Brookville, Pennsylvania, is getting ready to start his Clarion County road job. This is Harry's first road contract, and we wish him the best of luck. Bill Arthurs of Brookville, Pennsylvania, is associated with Harry, and no doubt his many years' experience in the road-building game will assure success.

Northern Ohio Notes

BY J. S. WEAVER

E. L. McKeigh is operating a Marion 21 for the Stevens Construction Company near Cleveland, Ohio.

Thomas Morton and John Clegg are operating Erie shovels for the Rankin Construction Co. of Uniontown, Pennsylvania, on their job in Indiana County, Pennsylvania.

J. E. Welsh is operating a Bucyrus-Erie shovel in the city of Cleveland.

John A. Pittsley is operating an Erie crane for L. Gage Booth at Painesville, Ohio.

T. P. Fitzgerald and Koski Construction Company, both well known in the construction field in Ohio and Pennsylvania, are making great headway on their Ashtabula contracts. William Koski is operating a Bucyrus-Erie shovel for the Koski Construction Company.

R. J. King is manipulating the levers of a Type B Erie for Bates & Rogers at Cleveland, Ohio.

THE IMPROVED

McCORD POSITIVE SIGHT-FEED LUBRICATOR

Establishes New Standards In Force Feed Lubrication

New standards of production in lubricator manufacture, plus improvements in design and construction embodied in the new McCord "LD" Lubricator, result in a range and accuracy of adjustment not previously obtainable. The oil flow can be regulated from one-tenth of a drop to ten full drops per revolution, while a positive adjustment insures equal distribution.

The McCord "LD" Lubricator starts pumping at the first turn of a wheel. It will not become air bound under any operating condition.

The McCord "LD" Lubricator pumps any grade of oil from the lightest mineral oil to the heaviest grade of cylinder oil. It is particularly adapted to the handling of high viscosity oils.

Drop forgings are used throughout. All parts are machined to close dimensions. Pump units are drop forged brass. Each unit is independent and can be removed for adjustment or inspection for cleaning, without disturbing other units.

Simplicity of operation and accessibility are combined in the McCord "LD" Lubricator, resulting in a lubricator devoid of minor troubles.

A new catalog on McCord Class "LD" Lubricators will be forwarded on request.

The new McCord "Class LD" Positive Sight-Feed Lubricator further establishes McCord leadership in this field. Important improvements, the result of McCord's twenty-eight years lubricator building experience, make the McCord "LD" an outstanding Lubricator for Diesel and oil engine use.

McCORD RADIATOR & MFG. CO.

Lubricator Division — Detroit, Mich.

3-W Monighan Draglines, operated by W. E. Callahan Construction Co., St. Louis, Dallas, Los Angeles. Equipped with Kohler Electric Plant for night work

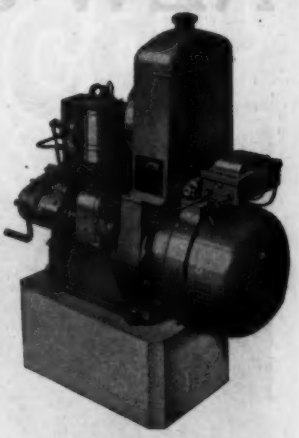
Keep on digging
—light up with Kohler Electricity

WORK goes right ahead, by night as well as day, when *Kohler Electricity* is on the job to tend to the lighting. Bonuses are earned and penalties saved. And equipment overhead is cut.

Many excavating engineers are mounting Kohler Electric Plants on excavators, draglines, dredges, and pavers. The W. E. Callahan Construction Co. is using the Model E in work on the big Texas Power Co. canal project.

This 1½ K.W. plant is remarkably compact—only 34¾ inches high, 35 inches long, and 16½ inches wide. It delivers 110-volt direct current straight from the generator, without the use of storage batteries, and will light six 250-watt projectors.

Kohler Electric Plants are exceptionally sturdy, with bearings 60 per cent oversize. Their balanced 4-cylinder construction eliminates destructive vibration. They are economical—automatic fuel regulation keeps down the operating cost.



Kohler Electric Plant
Model E, 1½ K. W.—110 Volt D. C.
Other models, 2, 5, and 10 K. W.

Kohler Co., *Founded 1873*, Kohler, Wis. · *Shipping Point*, Sheboygan, Wis.
Branches in Principal Cities

KOHLER OF KOHLER
Electric Plants
Automatic—110 Volt D. C.—No Storage Batteries

You are urged to investigate the performance record of these plants. A request for detailed information, prices, etc., will receive immediate attention.

In writing to Kohler Company please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

The Diamond Portland Cement Co. of Middle Branch, Ohio, announce the election of the following officers: Z. W. Davis, president; A. D. Raff, vice-president and general manager; Ray M. Raff, secretary and treasurer; G. A. Cherry, assistant secretary and treasurer.

At the Eleventh Annual Meeting of the National Slag Association which was held at the offices of the Association at 937 Leader Building, Cleveland, Ohio, June 8, 1928, the following officers were re-elected for the ensuing year: C. L. McKenzie, Duquesne Slag Products Company, Pittsburgh, Pennsylvania, president; C. E. Ireland, Birmingham Slag Company, Birmingham, Alabama, vice-president; H. J. Love, 937 Leader Building, Cleveland, Ohio, secretary-treasurer.

Detroit and Vicinity

BY P. M. RICHARDS

The N. W. Nelson Company were awarded the Grand Trunk relocation job between Royal Oak and Pontiac, Michigan, and are operating their Bucyrus 50-B Diesel on this work. Their office is located at 142 East Maple Road, Birmingham, Michigan. The work is in charge of Mr. Sisk.

The D. T. & I. Railroad awarded the dirt work on their cut-off near Delta, Ohio, to the Walsh Construction Company of Davenport, Iowa. They are placing a Bucyrus Class-24 oil-electric dragline on this work.

The R. D. Baker Company of Royal Oak, Michigan, and S. A. Healy of Detroit were each awarded a large drain job in Oakland County.

Hector De Nolf dropped in to see us recently.

S. A. Fattore is making rapid progress on his section of the Martin Drain in Macomb County.

This contractor is using the Track Machine on a dump of soft, sticky blue clay where it would have been almost impossible to shift track by hand methods.

Contractors Need This Machine

In the building of dumps and fills, railroad yard construction or any place where track must be shifted or raised, no other machine used in construction work will return a greater saving than the Track Machine.

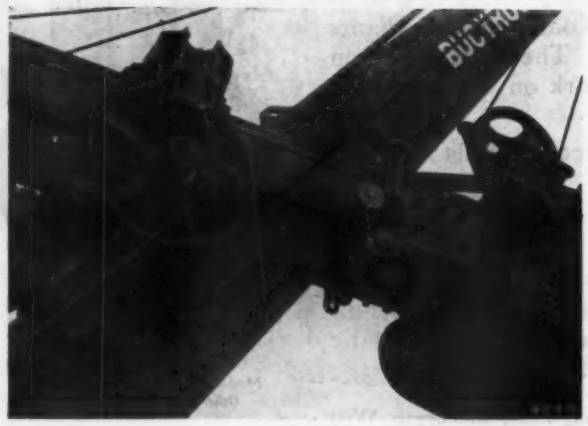
Bulletin GR-8 describes it.

NORDBERG MFG. CO., Milwaukee, Wis.

THE NORDBERG PATENTED TRACK MACHINE

NEW 50-B DIPPER TRIP

For Steam or Air



A power Dipper Trip will enable your crew to work to better advantage and to increase the yardage.

We have other designs for Steam and Electric Shovels.

Write for information on a suitable Dipper Trip for your machines.

BUCYRUS-ERIE COMPANY

SPECIALTY DEPARTMENT

SOUTH MILWAUKEE, WISCONSIN, U. S. A.

SHOTS FROM THE FIRING LINE — Continued

S. A. Healy has placed his Bucyrus-Erie 1030 crane on the Junction Avenue Tunnel job. He is using this crane instead of the customary tipple, both for material handling to the hopper and lifting and from the tunnel. Another item of interest in connection with S. A. Healy is the placing of one of his Class-14 draglines on a large sewer job in the east

side of Detroit. The accompanying illustration shows his Class-14 being moved to the job on one of Mr. Healy's trailers. Mr. Lauver, superintendent of equipment, seems to be ordering Mr. McDonald back to the office. We understand, however, that the argument was not as serious as one would judge from this picture.

The Jutton & Kelly Company will soon complete the West Michigan-Miller Road grade separation in Detroit. This will eliminate grade crossings on both Michigan Avenue and Miller Road with the Pere Marquette and Michigan Central Railroads, and is a much-needed improvement.

Four of Laramie Bros. Bucyrus-Erie shovels recently excavated for the basement and foundations of the new General Motors Building on Cass Avenue, Detroit.

Wisconsin Notes

BY E. P. DOYLE

Contract has been awarded to J. W. Lathers, Jr., for grading, draining and surfacing on Highway No. 154 between Ableman and Highway No. 23 near Baraboo.

Contract awarded to Burch Construction Company for 3¼ miles of grading and draining on Highway No. 58 between Ironton and the Richland County Line.

The Medford Bridge Company have been awarded contract for the building of the Dell Creek Bridge on State Trunk Highway No. 23, at the head of Mirror Lake. This company also got the contract for the building of the Henn Bridge on State Trunk Highway No. 60, west of Sauk City.

Rastus: "Huh! Clean forgot dat fun-al — bet dey had a big one."

Wash: "Yo' said it, boy — bigges' fun-al ever was roun' heah. All dem lodges an' societies what Mose belong to was out in dey full regalium, an' dey had fo' choruses to sing de hymns an' dey had t'ee preachers to preach the summon. Den dey had a long perade all de way to de graveyahd, an' mo' flawehs dan yo' eveh seen piled aroun' de grave. Dey put dat coffin on dem sticks 'crost de grave — an' den dat Mose Grindle done de blamedest thing you eveh seen at a fun-al. Yes, suh!"

"What did he do?"

"He des kicked de lid off dat coffin an' set right straight up an' looked aroun' at all de crowd!"

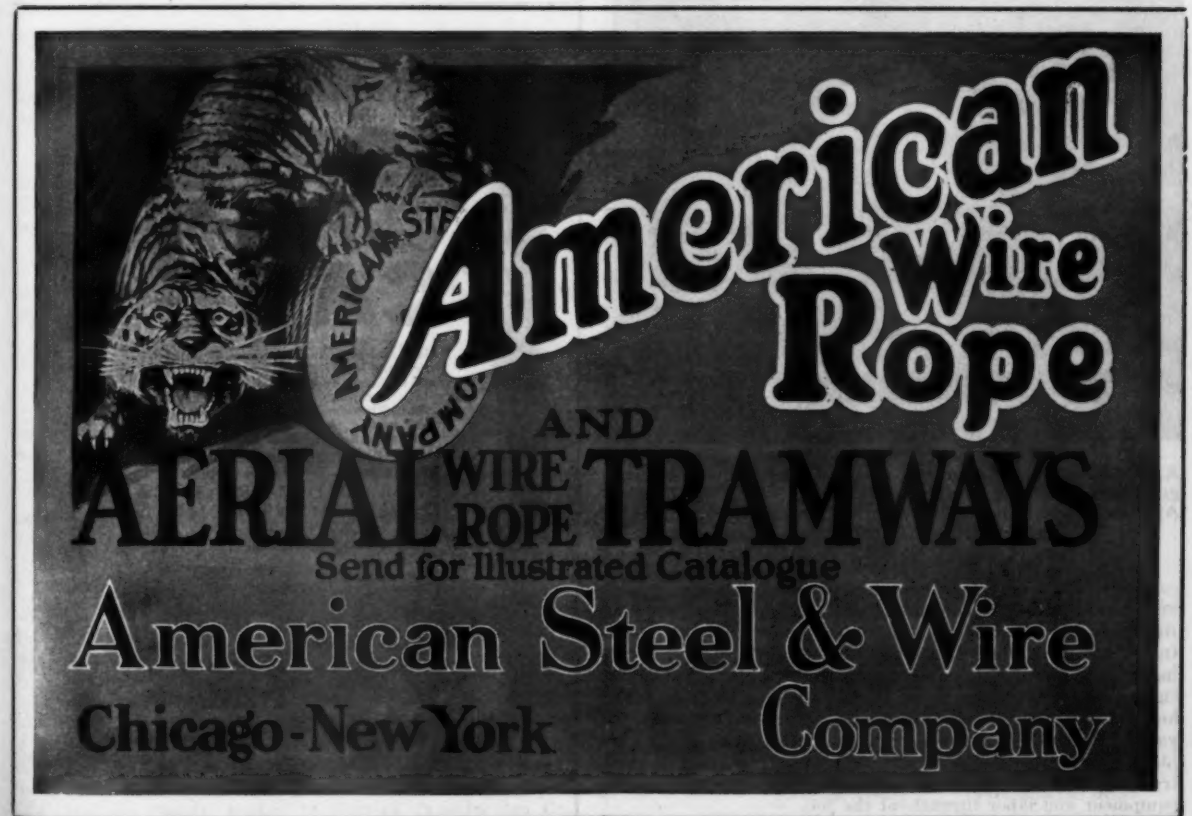
"My lawd! Did they bury him?"

"I don' know, but it sure was some fun-al!"

He came home and, as they say in the movies, found his wife sewing on a tiny garment.

"My dear, my dear!" he cried.

"Don't be silly," she replied. "This is my new dinner gown." — *Judge.*



SHOTS FROM THE FIRING LINE — Continued

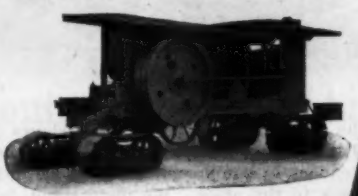
Work is being rushed to provide good roads for President Coolidge on his daily drive from camp on the Brule River to office and bank at Superior. An enormous crew is employed in graveling and oiling the roads, the chief concern being to lay the dust. It looks as though all the telephone trucks in the state, including a few from outside the state, have been requisitioned to put in telephone wires. Eight lines of telephone are being laid to establish complete contact with the Pierce Estate and the outside world. According to Harold Holmes, Engineer of the Highway Commission at Superior, all roads are in a fair to good condition. It is expected to exert every possible effort to give the President good roads all summer. The patrolmen have already started a contest to provide the best roads for the President and Mrs. Coolidge.

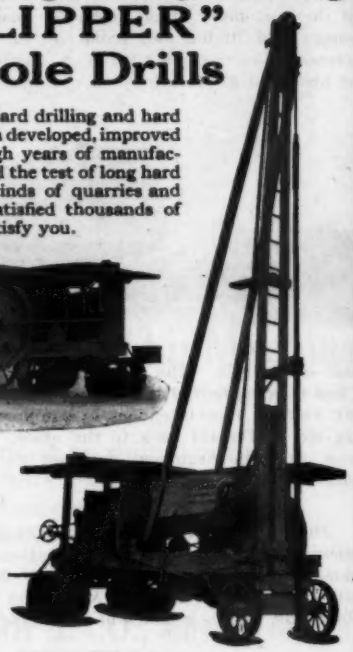
A. Wussow, Second from the Right, Poses with G. Nimergood and His Crew While the Gas + Air Waits for Trucks. Above: Here's "The Hole" with Wussow Brothers' and E. Radke's Shovels in the Foreground.

Work on the new Central Police Station, which when completed will occupy the entire block at 9th and State Streets, Milwaukee, has been started, and the Wussow Brothers are doing the heavy excavation work with their Gas + Air Erie, while E. Ratke is handling the lighter grading with a Northwest. A. Wussow is the superintendent in charge. The excavating work is 400 feet long, 300 feet wide, and goes to a depth of 38 feet, total yardage being 23,000 yards. The dirt is being carried to the Milwaukee garbage plant by a fleet of twenty-five trucks owned by the two contractors, who work together and are sharing each other's equipment and labor throughout the job.

Hard Drilling is Easy Drilling for "CLIPPER" Blast Hole Drills

They are built for hard drilling and hard usage. They have been developed, improved and perfected through years of manufacture. They have stood the test of long hard field service in all kinds of quarries and mines. They have satisfied thousands of owners. They will satisfy you.





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MINIMUM Delays
MAXIMUM Life
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With "CLIPPERS"

THE LOOMIS MACHINE CO.
(Established 1842) K Street, Tiffin, Ohio

KOPPEL
Air dump
CARS

Used and preferred by scores of industries and contractors for many good and sufficient reasons. The quick automatic dumping action saves time and labor. The standard all-steel construction makes them durable and long-lasting for hard service.

The Koppel Catalogue tells you all in detail. Send for your copy.

KOPPEL INDUSTRIAL CAR AND EQUIPMENT COMPANY
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KOPPEL

SHOTS FROM THE FIRING LINE — Continued

The location will be an ideal spot for the Police Department, as it is located in the center of the city. Many County offices will also be accommodated.

St. Louis Items

BY A. J. KOENIG

An agreement between the Wabash Railway and the City of St. Louis was reached over the erection of a viaduct across Broadway in North St. Louis. The railroad plans call for a concrete double-track viaduct. Approximate cost $90,000.

Washington University at St. Louis, Missouri, plan the construction of a stadium west of the city. The stadium will be of the excavated type similar to the Yale Bowl, with the playing field depressed below the street level and the tiers of seats built on the descending slopes surrounding the arena. Estimated cost $450,000. Jamison and Spear are the architects.

The Frisco Railroad plan the construction of a concrete viaduct across their tracks at Joplin, Missouri, approximate cost $100,000. Col F. G. Jonah, St. Louis, is the engineer.

Riley Contracting Co. was awarded the contract for the Whitehead sewer at St. Joseph, Missouri, on their bid of $41,909.

W. W. Horner, chief engineer, St. Louis, will seek bids about August 1st for a reinforced concrete horseshoe sewer in Section "E" River Des Peres project. Estimated cost $1,050,000.

Thos. J. McCann has a machine outfit at work near Danville, Illinois, on 125,000 yards road grading that he subbed from Jos. Kesl & Son.

The low bidder on the Eastern Rocky Branch sewer at St. Louis was Geo. G. Prendergast; his bid was $480,000. R. J. Blackburn was low bidder for the first section of the Southwestern Joint sewer; his bid was $211,000.

Dave Keating was low bidder on one section of the Pike County, Illinois, approach to the Louisiana bridge. This section contains 110,000 yards.

J. W. McMurry Contracting Co. is rebuilding eight piers between Monett and Poteau on Frisco Railroad and also putting in four new foundation and steel spans on the Wabash Railroad between Decatur and Chicago.

H. C. Bothford reports that with the good weather he is making fine progress with his state road work in Wyandotte County, Kansas.

James Stanton & Son, Leavenworth, was awarded a nice road job in Leavenworth County, Kansas.

Cameron, Joyce and Co. have several outfits at work on highway jobs in Illinois and were awarded another nice highway grading job on Route 96, Section 123A, at $104,732.

J. Kesl & Son, Edwardsville, landed two good highway contracts at the last letting in Illinois: Route 40, Section 120, $154,092; Section 121, $179,915; both in Vermillion County.

The State Division of Highways at Springfield, Illinois, awarded the following contracts: Section 124, to Charles W. Clark, Terre Haute, Indiana, $155,186; Section 104B, Route 132, Moultrie County, bridge, to L. R. Harshman, Sullivan, Illinois, bid $21,266; Section 105B, Route 114, Kankakee County, bridge, Duncan Construction Co., Ottawa, Illinois, bid $18,737; Section 118B, Route 95, Hancock County, bridge, to Harry C. Holmes, Macomb, Illinois, bid $20,979; Route 90, Section 117A, Rock Island County, grading, to J. L. Wells, Rock Island, Illinois, at $90,202; Route 165, Section 126B, McLean County, bridge, to Herrick Construction Co., Carlinville, at $18,648; Route 160, Sections 135, 136, paving, Section 136B, grading, Nelson Construction Co., Jerseyville, $206,000.

Among additional contracts awarded by Illinois State Highway Division are the following: Route 150, Randolph County, grading, to Keeley Bros., East St. Louis, at $93,725; Route 86, Whiteside County, grading, to Frank D. Hayes, at $18,694.

Massman Construction Co. was low bidder on two river jobs.

A. A. Luck, Kansas City, was awarded a paving job in Wyandotte County, Kansas. He expects to get started at once.

A. L. Cook was low bidder on a number of state highway jobs in Kansas recently.

The Arkansas State Highway Commission awarded contracts totaling $1,022,506 at a recent letting. There was 13 projects located in twelve counties. More than 100 bids were received and nearly all the low bids were slightly under the engineers' estimates. Cook & Ransom, Ottawa, Kansas, Pioneer Construction Co., Kansas City, and Maxwell Construction Co., Columbus, Kansas, were among the successful bidders.

Lehar Brothers, Piggott, Arkansas, were granted contract on Job 1042, Greene County, Arkansas, approximately 11½ miles, near Paragould, Arkansas. This job is grading, draining and gravel surfacing. They have an outfit at work there at this time.

Walter Lemaster at Wolf Lake, Illinois, has a caterpillar machine and ten wagons and teams idle.

John Marsch, Incorporated, Chicago, Illinois, has about 10,000 standard gauge ties, mostly hardwood, located on the

HARD DIGGING?

Use the heavy duty "Hercules"

This powerful WILLIAMS Bucket has often made good headway in materials that looked too hard for any bucket to dig. Write for our Bucket Book.

G. H. WILLIAMS COMPANY
603 Hayberger Lane, Erie, Pa.
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WILLIAMS
FAST-DIGGING BUCKETS

The PLYMOUTH LINE OF GASOLINE AND DIESEL LOCOMOTIVES IS COMPLETE FROM 2 TON TO 50 TON SIZES

TIME IS THE TEST. IT'S THE SAVING IN OPERATION COST THAT COUNTS.

PLYMOUTH LOCOMOTIVE WORKS
The Fate-Root-Heath Company
277 Riggs Avenue PLYMOUTH, OHIO

SHOTS FROM THE FIRING LINE — Continued

Southern Illinois and Kentucky Railroad near Bluford, Illinois. Any one interested can get in touch with them at their office at 1307 Wrightwood Avenue, Chicago, Illinois.

John Kenney has finished his grading job on the Chain of Rocks bridge near here and has his outfit at work on a highway job in Illinois.

Pacific Coast Notes

BY J. H. SACKETT

Surveys and plans are being made by Engineers Thebo, Starr and Anderton, Sharon Building, San Francisco, for work in Porta Costa District for the California Water Service Company, located in the Hunter-Dolin Building, San Francisco. The proposed work will consist of taking water from the Sacramento River near Rio Vista, involving the following work: Pipe line, 32 miles of 42-inch to 24-inch diameter steel pipe, and possibly some cast iron or concrete; dam, earth-filled type, 100 feet wide and 1330 feet long; pumping plant, capacity 4000 feet. It is expected that the plans for this work are to be completed in a month or two.

The Calaveras Cement Company announces the appointment of William MacNider as assistant general manager of the company, assigned to special duties. H. C. Maginn has been appointed sales manager, succeeding Mr. MacNider, and will have charge of the sale and distribution of Calaveras cement. Arthur B. Shelby is general manager of the Company. They have a Bucyrus-Erie 50-B electric shovel at their plant at San Andreas, California.

Following are the two lowest bids by the United States Bureau of Reclamation for Owyhee Dam, concrete arched gravity type, 30 miles southwest of Nyssa, Oregon: General Construction Company, Colman Building, Seattle, Washington (low), $3,199,000; Fisher & Ross, Los Angeles, $3,306,000.

"JIMMY" WALKER, Mayor of New York, is shown here breaking ground for a new $4,000,000 car barn in the metropolis.

The Hayward Orange Peel Bucket operated by the Eastern Construction Co. will finish what the Mayor is starting.

Haywards should be chosen for any tough digging assignment — hard-packed soil, outdoor winter excavation, under-water work and the like.

Hayward Buckets

The HAYWARD COMPANY
52-54 Church St., New York

Your Cheapest Insurance

In buying TAYLOR MESABA chains you buy insurance against breakdowns and repair expense — insurance against expensive delays that keep shovel, trains and plant idle while a repair link is being placed — insurance against personal injuries that cause lost time, pain and suffering, perhaps even death.

This insurance is built into TAYLOR MESABA by Master Craftsmen who understand every essential of perfect chain making. Special attention is given to the selection of the finest of raw material — careful workmanship goes into every step in the manufacturing process — the finished product is proof tested and each individual link is given careful inspection.

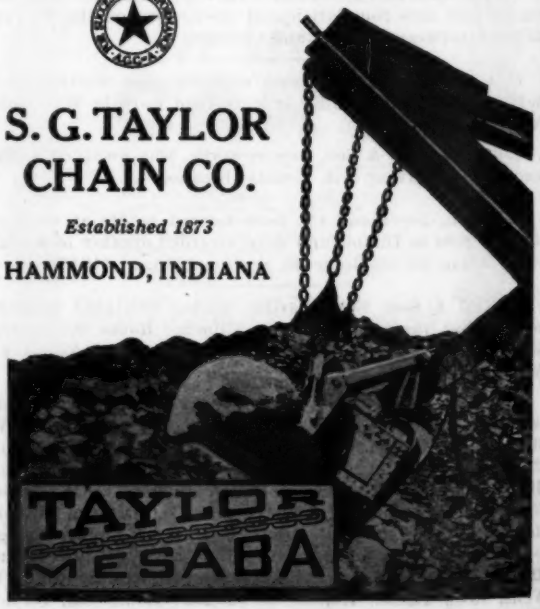
TAYLOR MESABA is not just "chain". It is TAYLOR MESABA — that means it's the best chain that science can build or money can buy. It's branded for your protection. The TAYOR MESABA brand is your insurance policy.

"BEST BY TEST"

S. G. TAYLOR CHAIN CO.

Established 1873

HAMMOND, INDIANA



On Rough, Uneven Track—
Haul with Shays

Have you a copy of the latest Shay catalog?

IN Shay Geared Locomotives, the trucks are connected to the locomotive frame by a center bearing which permits the trucks to turn freely.

Consequently, the Shay has no fixed rigid wheel base. Shay trucks compensate for track inequality, and enable the Shay to operate steadily and dependably over rough, uneven track, without derailment, and without damage to either track or locomotive.

Ability to operate on rough, quickly-laid and unballasted track is only one advantage that makes the Shay ideal for stone service. For complete data, write for a copy of the Shay catalog.

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Incorporated
17 East 42nd St., New York — Lima, Ohio

Shay Geared **LOCOMOTIVES**

In writing to Lima Locomotive Works, Inc., please use post card bound in the center of this number.

TRADE NOTES

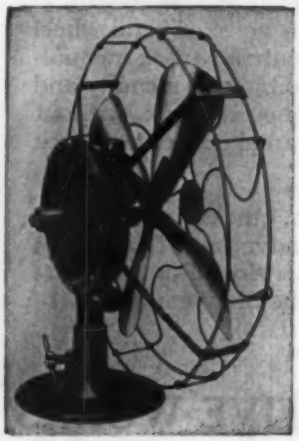
Bucyrus-Erie Company have announced the opening of an office at 1212 Magnolia Building, Dallas, Texas, which is in charge of Mr. E. J. Wilkie, District Sales Manager. They also have recently established an office at 2647 Washington Boulevard, St. Louis, Missouri, Mr. H. H. Buchanan and Mr. B. R. Andres being the representatives handling the St. Louis territory. The Bucyrus-Erie Boston office has been moved to 230 North Beacon Street, Brighton District, Boston. The Detroit office to 956 Book Building and the Pittsburgh office to 1502 Clark Building. The new sales and parts warehouse at San Francisco is located at 989 Folsom Street, while at Los Angeles repair parts for Bucyrus, Erie and Bucyrus-Erie machines are all handled by the Concrete Machinery and Supply Company, 2014 Santa Fe Avenue.

Ingersoll-Rand Company have opened a new branch over the St. Louis office at 226 West A Street, Picher, Oklahoma. This new office will place Ingersoll-Rand in a better position to serve its customers in northern Oklahoma, Southern Missouri, and Arkansas.

"What kind of a store is that fellow over at Toad Rock running?" asked a motorist.

"Well, he has Ford parts for sale," replied the attendant in the filling station at Ten Degrees, "buys butter, eggs and poultry, deals in real estate, paints houses, marries folks in his capacity as Justice of the Peace, runs the post office, sells stamps, hams, molasses, etc., and takes boarders upstairs. I reckon you'd call it a drug store." — *Kansas City Star.*

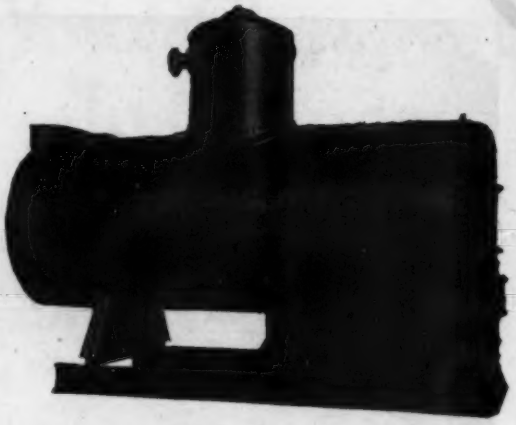
This Steam-Driven Fan



Mounted on your shovel or dragline will make hot days cooler for your operator, will drive away flies, mosquitoes, etc. This will mean greater comfort, greater yardage, and in the end —GREATER PROFITS.

A ¾" pipe supplies all the steam required.

BUCYRUS-ERIE COMPANY
SPECIALTY DEPARTMENT
SOUTH MILWAUKEE, WIS., U. S. A.



EXACTLY RIGHT
for your particular machine

PRESSURE ENOUGH to speed her up and handle the hardest digging.

CAPACITY ENOUGH for all demands and at reasonable fuel cost.

SUBSTANTIAL ENOUGH to stand up to your kind of work, year after year, without breakdowns.

Nothing less than the highest quality can be EXACTLY RIGHT.

DO YOU LOOK FOR

JOHNSTON BROS., Inc.
Specializing in Boilers for Contractors' Equipment
FERRYSBURG, MICHIGAN

BOOK REVIEWS

We shall be glad to review such books and catalogs as are sent us

Miami Trailer-Scraper Company of Troy, Ohio, have issued a very attractive and interesting folder entitled "There's Gold in Every Yard of Earth," describing and illustrating uses of their various tractor attachments. These include tractor scrapers, power winches, back fillers, bull dozers, dump trailers, as well as other forms of wagon trailers. As these offer opportunity for economy in earth-moving through pay roll reductions the booklet will be of interest to excavators everywhere. Copies may be obtained by writing *The Miami Trailer-Scraper Co., Troy, Ohio.*

"IMPORTANT ROCK DRILLING PROJECTS," — a book of reprint articles covering a number of the important drilling jobs in 1927 has been recently issued by the *Ingersoll-Rand Company, 11 Broadway, New York City.* The book is issued to fill the numerous demands of mine owners, contractors, and quarrymen for descriptive data of recent important projects. Included in the collection are articles on the Cascade Tunnel, of the Great Northern Railroad, the Chicago Intake Tunnel, the Conowingo Dam, Strengthening Power Dams in the Alps, Extending New York City's Subways, Vermont's Varied Marbles, etc. These articles are beautifully illustrated and are bound together in an attractive cover of heavy stock. This booklet is proving very popular as it gives the contractor or operating man an opportunity to study the application of machine methods on other jobs and make comparisons with his own. Copies of this booklet may be had by writing to any of the Ingersoll-Rand Branches, or to the main office at *11 Broadway, New York.*

PORTABLE AIR COMPRESSORS

120 cu. ft. size illustrated, $1,650.00, F. O. B. Factory.

Furnished in sizes ranging from 15 to 360 cu. ft., both portable and stationary engine or motor driven, or truck and tractor mounting. "SCHRAMM" Compressors cover all requirements of the field.

CONVENIENTLY LOCATED STOCKS and SERVICE

Schramm, Inc.
West Chester, Pa.
Offices and representatives in all important cities.

Schramm

When Completion Dates Crowd You . . . .

Moon Turbo Generators
Capacities—1, 1½, 3 and 4 KW.

Moon Floodlight
Type D—18"

WORK your equipment nights by installing a Moon Generator and Moon Floodlights—and speed up your production as well as your profits.

For over 15 years contractors have found Moon Generators the solution to their night lighting problems. Built of rugged construction, easy to operate and maintain, and, above all, absolutely dependable in performance — the Moon insures you steady, reliable light.

A Moon Steam Fan on your shovel keeps your operator cool during those hot summer months, also blows away the swarms of flies and mosquitoes. Consequently it increases his yardage and your profits. It's a good investment from every angle.

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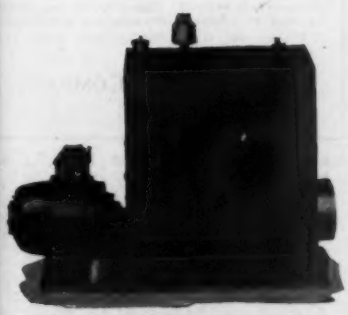

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Direct Connected
1½, 2¼, 3 and 4 KW.

Moon Steam Turbine Fan
18" diameter

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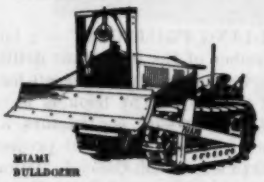
A NEW MIAMI TRAILER with Crawler Treads

MIAMI SCRAPER



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Power-Drawn Equipment

Miami creeper tread trailers — 6-tons capacity — furnished with stake platform bodies, logging bolsters or cane hauling racks. For operation in single units or in trains. Creeper treads and front steel wheels run on roller bearings. Axle risers steel castings hot riveted to steel I-beam chassis frame giving ground clearance under trailer to height of frame. Drop forged front axle — steel casting fifth wheel — drawbar hinged at axle for connection to tractor at any height. Strongly built for continued, uninterrupted service.

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Miami Scrapers and Bulldozers are power operated by Miami Power Winches. Miami Winches when attached to tractor offer universal service for many other power purposes. Miami Scrapers automatically load, transport and dump a cubic yard of earth by one man — the tractor driver. Dumps standing still, going forward or in reverse motion. Can be hooked into any position. Miami power operated Bulldozers for trench filling or earth leveling. Instant control through Miami Power Winch.

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OSGOOD STEAM SHOVEL, ¾ yard, equipped with 21-foot boom, 17-foot dipper stick, ¾-cubic-yard dipper. Shop number about 1300. Purchased new in 1924. New caterpillars put under shovel last year. Has been operated by owner. Address Box 601, The Excavating Engineer, South Milwaukee, Wisconsin.

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INDUSTRIAL LOCOMOTIVE CRANE, 15-ton, 8-wheel MCB, thoroughly overhauled.
THEW "00" GAS SHOVEL, on crawlers, 2 years old and fine.
Prices very low.
"ZELNICKER" in St. Louis
Rails, Equipment, Hoists, Steel Piling, Etc.

BUCYRUS 30-B 2-MOTOR ELECTRIC SHOVEL on caterpillars, shop number about 4650. Shipped from our works March 5, 1926. Machine designed to take 60-cycle, 3-phase, 440 volts alternating current. Equipped with 25-foot 9-inch boom, 14-foot handle, 1⅛-cubic-yard plate front dipper, power boom hoist, electric dipper trip, and Dot lubrication. This machine is in first-class condition, both mechanically and electrically, and has been used on easy sand digging through the summer months only. Address Box 701, Excavating Engineer, South Milwaukee, Wisconsin.

TYPE "O" THEW ELECTRIC SHOVEL, one motor, purchased June 9, 1923. Equipped with 35 horse power motor, 60-cycle, 3-phase, 440-volt Caterpillar-mounted, 20-foot boom, 19-foot dipper stick, ¾-cubic-yard plate front dipper. Machine in excellent condition, working every day. Address Box 700, Excavating Engineer, South Milwaukee, Wisconsin.

MARION 36 STEAM SHOVEL, shop number about 4750. Equipped with 28-foot handle, 1½-yard manganese bucket, caterpillar mounted. Machine in excellent condition, working every day. Has handled small yardage. Located Central Kentucky. Address Box 702, Excavating Engineer, South Milwaukee, Wisconsin.

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